CLAIMS:

(amended August 24, 1999)

1. A eukaryotic neutral sphingomyelinase having the sequence according to SEQ. ID. NO. 1 or SEQ. ID. NO. 2 and variants of said eukaryotic neutral sphingomyelinase of SEQ. ID. NO. 1 or SEQ. ID. NO. 2 which correspond to eukaryotic neutral sphingomyelinase in terms of biological and/or immunological activity.

2. A eukaryotic neutral sphingomyelinase, characterized by being a C-terminally or N-terminally truncated variant.

3. A nucleic acid coding for the eukaryotic neutral sphingomyelinase according to claim 1 ~~or 2~~.

4. The nucleic acid according to claim 3 having the sequence according to SEQ. ID. NO. 3 or SEQ. ID. NO. 4.

5. The nucleic acid according to ~~at least one of claims 3 to 4~~ claim 3, characterized by being DNA, RNA, PNA or nuclease-resistant analogues thereof, mRNA, cDNA or genomic DNA.

6. The nucleic acids according to claim 5, characterized by being the gene for eukaryotic neutral sphingomyelinase which contains non-coding regions (introns) in addition to coding regions (exons), especially a gene having the sequence according to SEQ. ID. NO. 5 or SEQ. ID. NO. 6.

7. A nucleic acid, characterized by being complementary to the nucleic acid according to ~~at least one of claims 3 to 6~~ claim 3.

8. The nucleic acid according to ~~at least one of claims 3 to 7~~ claim 3, characterized by being derivatives, fragments with more than six nucleotides or variants of such nucleic acids.

9. Antibodies, characterized by being directed against the eukaryotic neutral sphingomyelinase according to any of claims 1 or 2 or a nucleic acid according to at least one of claims 3 to 8.

10. A cell line, characterized by overexpressing the neutral sphingomyelinase according to claim 1 ~~or 2~~.

11. The cell line according to claim 10, characterized by being a cell line which expresses eukaryotic neutral sphingomyelinase and is based on the cell lines U937, HEK 293 or Jurkat.

12. A transgenic mammal exhibiting overexpression (gain of function) or a genetic deficiency or defect (loss of function) for eukaryotic neutral sphingomyelinase according to claim 1 ~~or 2~~.

13. The transgenic mammal according to claim 12, characterized by being a rodent.

14. A medicament containing the eukaryotic neutral sphingomyelinase according to any of claims 1 or 2, a nucleic acid according to at least one of claims 3 to 8, and/or an antibody according to claim 9, together with further auxiliary agents.

15. A diagnostic agent containing the eukaryotic neutral sphingomyelinase according to any of claims 1 or 2, a nucleic acid according to at least one of claims 3 to 8, and/or an antibody according to claim 9, together with further auxiliary agents.

16. Use of the medicaments according to claim 14 or the diagnostic agents according to claim 15 for the diagnosis and treatment of diseases based on over- or underexpression and/or an increased or reduced activity of eukaryotic neutral sphingomyelinase and/or disorders of cell proliferation, cell differentiation and/or apoptosis.

17. The use according to claim 16, characterized in that said diseases are inflammation processes, cell growth disorders, cancers and/or meta-

bolic disorders, such as disorders of cholesterol homeostasis (atherosclerosis).

18. A method for the screening of active substances, characterized in that a change in expression or activity of the eukaryotic neutral sphingomyelinase is measured in cell lines according to claim 10 upon the addition of at least one potential pharmaceutically active substance.

19. Use of the cell line according to claim 10 for developing and testing pharmaceutical leading structures.

20. A process for the preparation of the eukaryotic neutral sphingomyelinase according to ~~any of claims 1 or 2~~ Claim 1 by chemical peptide synthesis or by expression in genetically engineered organisms, especially in eukaryotic expression systems.

21. A process for the preparation of a nucleic acid according to ~~at least one of claims 3 to 8~~ by chemical synthesis or by amplification in genetically engineered organisms.